



Double-Loop Learning, Teaching, and Research

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Double-Loop Learning, Teaching, and Research

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A new genre of case methodology is described that can be used to help participants diagnose and increase their competence in helping themselves and others to become more effective leaders, learners, and facilitators of double-loop change. The case methodology can, at the same time, test features of theory using a quasiexperimental approach.

Learning may be defined as the detection and correction of error. *Single-loop learning* occurs when errors are corrected without altering the underlying governing values. For example, a thermostat is programmed to turn on if the temperature in the room is cold, or turn off the heat if the room becomes too hot. *Double-loop learning* occurs when errors are corrected by changing the governing values and then the actions. A thermostat is double-loop learning if it questions why it is programmed to measure temperature, and then adjusts the temperature itself.

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We find that many people espouse double-loop learning, are unable to produce it, are blind to their incompetencies, and are unaware that they are blind. This pattern is so common that we call it a generic "antilearning" pattern (Argyris, 1993; Argyris & Schön, 1996).

This article describes a new methodology to help individuals gain insight into and enhance their competence for helping themselves and others to detect and correct difficult, potentially embarrassing, or threatening, problems. Second, it shows

how the learning context can be used as a test of the very features of the theory used to design the learning experience.

The article is divided into three parts. The first describes the learning experience wherein the methodology was used. The description draws heavily upon transcripts of the tape recordings made of the entire learning experience. The second introduces the relevant theory-of-action concepts that were used to design and implement the learning experience. The third part explores how the learning experience can also serve as a quasiexperiment to test features of the theory of action.

PART 1

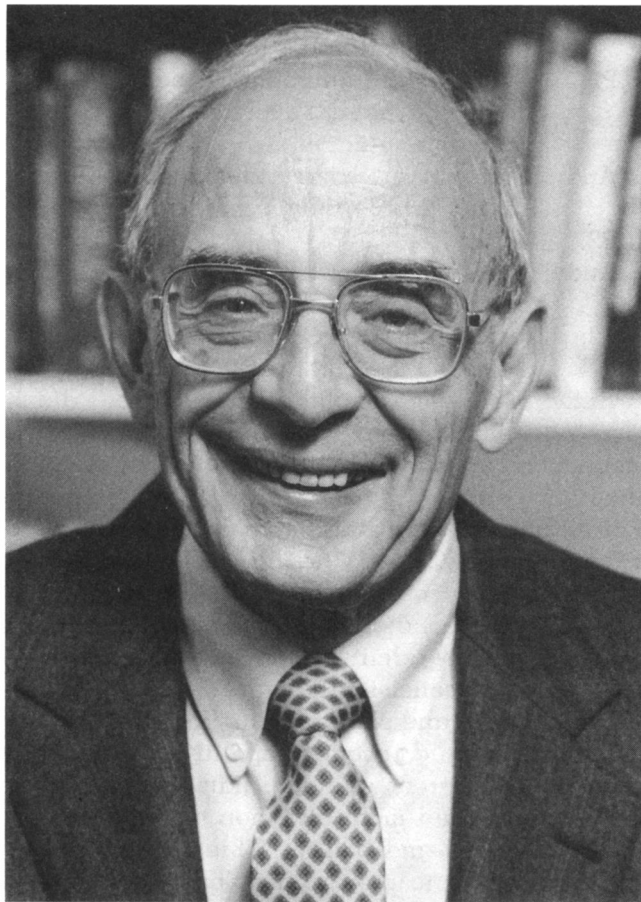
The Case and the Learning Experience

The group described in this paper was composed of 34 chief executive officers (CEOs) who were attending a 3-day conference on leadership and learning. My component consisted of three 2-hour sessions.

The participants read the "Andy Case" ahead of time. It tells the story of how Andy failed to become a CEO in a company that hired him on as the COO fully expecting that he would become the CEO. The case describes the authors' diagnosis of the errors Andy made that led to his demise (Ciampa & Watkins, 1999). The authors state:

First, Andy did not learn enough about the organization. He failed to use the time before entry to jump-start his transition. Once aboard, he did not learn enough about the politics and culture of the company. When he did focus on learning, he concentrated on ar-

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as he already knew well and assumed problems elsewhere could be resolved easily.

Second, he overemphasized action at the expense of understanding what it would take to make changes. He moved ahead with his agenda rather than combining what he believed to be important with what was important to Ted (the CEO). In the process, he forgot who was the boss.

Third, Andy failed to motivate others, especially the senior managers in Manufacturing and Engineering, to abandon their comfortable habits and work patterns.

Fourth, he became isolated. Andy never built coalitions to support his efforts to transform the organization. He also misread existing coalitions, overvaluing his initial mandate from a key board member and failing to build a constructive working relationship with Ted.

Finally, Andy did not manage himself well. His overconfident personality and lack of ma-

turity caused him to make several bad judgments. A need to be seen as competent and in control blocked learning and prevented him from building supportive coalitions. His failure to manage stress, combined with his belief that his plan was correct, led him to blame others and kept him from recognizing warning signs or seeking advice (Ciampa & Watkins, 1999: 9).

The faculty member (FM) introduced the case by stating that its purpose was to help participants become more aware of their effectiveness in helping others—in this case Andy—to become more effective leaders.

The FM would role-play Andy, striving to make his behavior consistent with that of Andy in the case. If, at any time, people doubted the validity of his role-play, the FM asked that they please feel free to surface those beliefs.

The role-play by FM has two major components: (1) A genuine acknowledgment that he (Andy) did produce the aforementioned errors, and (2) a genuine desire to learn not to repeat these errors in some future opportunity. There are several reasons for these components. The first is to create a situation where the participants are not facing an "Andy" who is strongly resistant to learning. This should help reduce the likelihood that, if the participants fail to help Andy, it is not caused primarily by Andy's resistance. The second is to use Andy's responses as explicit cues to the participants about their helpful and unhelpful actions.

Illustrations of What Happened

The following material is taken from transcripts of two sessions. Each session lasted about 2 hours. The first illustrates how Andy (role-played by FM) introduced his request for help and the dialogue that followed. The second session illustrates what happened when the FM asked the participants (P1, P2, etc.) to reflect on their experiences of the first session.

Session 1

Andy (role-played by FM) begins.

Andy: You know folks, I was sucked into managing this company, especially during the courting period. They said they needed me, that I was the best candidate, and they promised that I would be the next executive. Now, I did some things wrong. And, that is what I want to focus

on. I do not want to repeat this experience again.

P1:¹ I think you should have spent more time interviewing your direct reports, learning their skill sets—

Andy: I have two reactions. One is that I did a lot of that. But, as I now see it, I probably behaved ineffectively during those interviews. I need to learn how I should behave during these sessions. What is it that you think I should have done more of?

P1: Show a simple force of strength... develop measures for a baseline.

Andy: No, I didn't do that. When I develop these measures, what do I do with them, do I give them to my immediate reports?

P1: Sure.

Andy: Then what do I do?

P1: Measure their performance.

Andy: And how would this help me to overcome the errors that I made?

P1: Well, you could then back up your decisions, for example, with firing the two executives, with quantifiable evidence.

Reflection. The FM strives to identify any gaps and inconsistencies in P1's advice that are likely to make the advice—from Andy's perspective—less effective. For example, P1 does not specify the actual behaviors he has in mind when he advises Andy "to interview," "to learn," and "to show a simple force of strength."

P1 does not appear aware of these gaps. When "Andy" asks him to make his advice more concrete, he remains at an abstract level. When Andy asks P1 how he believes his advice would help to overcome the errors that he made, P1 responds that he could fire the two executives with more legitimacy because he had quantifiable data to support such actions. Such interactions begin to build the case that P1's actions are counterproductive to the very learning he advises Andy to produce, and that he is unaware of this counterproductiveness.

P2: You should have learned more about the workplace culture, especially his position. For example, learn more about the relationships these executives had with the CEO.

Andy: Yeah, but the CEO, Ted, and the board kept telling me to focus on growth, growth, and growth. Also, they told me

that this was a fat and happy organization. These attributes had to be changed...

P2: I would say that you can't believe everything you hear. You have to be careful; you can't be naïve.

Andy: I am not sure that I understand. Are you saying that I, Andy, am naïve?

P2: Yes.

Andy: Well, what is it that led you to this conclusion, that I am naïve?

P2: Just because the CEO and board said that, it doesn't mean that you should accept it.

Andy: Well, you are right. I was naïve. I didn't think that he was playing games with me.

Reflection. Andy defends his actions by placing the blame on the CEO and certain board members. For example, Andy states that he was acting to satisfy the CEO and the board's demands for growth and for changing the "fat and happy" organization. P2 responds that Andy was being naïve. Andy eventually admits that this may be true, but says he acted consistently with the demands that he be decisive and shake up the organization.

As the dialogue becomes repetitive, some members try a different strategy, namely, that Andy should have paid more attention to the organizational defenses and politics. This provided Andy the opportunity to project the blame on the CEO and the board, saying that he acted in ways to fulfill his promises to both bodies. From Andy's perspective, he acted decisively.

Up to this point, we have a dialogue where Andy expresses that the participants' advice was not helpful, and he defends his actions.

Andy: I think you are telling me that I screwed up. It may be true—yes, it is true, but I don't find what corrective action that you believe I should take.

P3: Andy, if you could go back and do one thing differently, what would it be?

Andy: I would not have taken the job. If I had known that Ted was not ready to give up the CEO position, I would never have taken the job. When a board member bangs his fist on the table while he is telling you to grow the company and another tells you the organization is fat and happy, and a third tells me explicitly that Ted is ready to leave, then I acted. I think some of you are saying I should have done a better job of due diligence. But how?

P3: You were making changes that harmed the organization.

Andy: No, I don't believe that for a moment. I was helping the organization.

¹ The participants are numbered sequentially as they speak. P1 in this section may not be P1 in another section.

P3: Well then, I don't think that you will learn much from our trying to help you.

Andy: Are you telling me that when I tell you what I honestly believe, you can conclude that I can't learn? What is the reasoning behind your conclusion?

Reflection. The dialogue appears to be a recipe for creating feelings of frustration for both the advisee and advisors. If such feelings were brewing, they were not voiced. At some point, however, they are likely to surface, if no other reason than Andy is evaluating the advice negatively and acting defensively. At the end of the P2 episode, for example, Andy states: "I think you are telling me that I screwed up. It may be true . . . but I don't find what corrective action (you specify) that I should take."

Reflecting on P3's interventions, the advisors for the first time began to focus on the ineffectiveness of their dialogue with Andy. The focus was upon what was going on in the room. The second feature was that P3's advice was crafted in ways that made it easy for Andy to place the blame on others.

P4: I hear you using a lot of "you" statements, but not a lot of "I" statements. How does that help you to learn?

Andy: I started this by saying that I needed help. So far the advice that I am getting tells me: "You did create the errors (listed in the case material), you should start by correcting the errors," but how do I correct the errors? You tell me I should have gotten close to the CEO. I don't disagree with that. I'm just trying to figure out what I could have said.

P4: Ask the CEO, "What do you do when you take care of these people that you say are fat and happy? What would you like to see done?"

Andy: Well they told me, "Energize these people, you run the show."

Reflection. Of interest is the fact that P4 was a faculty member of another CEO workshop designed to help the attendees become more effective leaders. One of the bits of advice in his framework was that successful executives should first take responsibility for their actions (hence make more "I" statements). Indeed, P4 showed a laminated card that included this advice. He used the card to help him craft advice. P4 said that this episode helped him to see that using the card as he did, in fact did not help Andy to take on more responsibility for these actions. He also realized that he never thought of using the advice on the card to help him to see that the way he used the card actually helped Andy to reject that he needed such advice.

P5: But you didn't go directly to the CEO and pose any difficult questions, such as "If we move to replace these people who will support my actions?"

Andy: You are right. It never dawned on me that they would not have supported me. Not with all the stuff they told me about being decisive and move the fat and happy organization. See, I said that I am going to show them what I can do.

P6: Maybe you should have studied the relationship between the CEO and his immediate reports more carefully.

Andy: Yes, I think that the board told me that the CEO built the company, and there is a lot of loyalty to him and he feels a lot of loyalty to people. I also heard from the board that this is part of the problem. Remember, they told me that they had two or three good inside candidates, but they decided that they had to look outside.

P1: Andy, as I hear you, you decided that you didn't really need to hear from the old guard. It was like you made a decision that they were not going to change, and they had to go right from the beginning. What chance did they have under your regime to catch your vision and for you to bring them on board the team?

Andy: Well, I admit I was biased against poor performance.

P8: Maybe you are trying to protect yourself.

Andy: There is plenty of data that I protected myself and got myself in trouble. I want to learn how to not repeat that.

P9: Maybe you should have talked more openly and frequently with board members.

Andy: Yes, what would I have said? And how do I deal with the CEO? What do I say?

The dialogue continues with escalating differences on behalf of all the participants, for example, P8 attributes simplistic solutions to Andy. Andy responds that he is getting simplistic advice. P8 counters that Andy seeks to protect himself. Andy replies that he wants to learn. P9 advises Andy to overcome his blind spots. Andy counters, "How?"

When one participant's advice focused away from what is happening in the room, the FM decided it was time for him to intervene. The criteria that he used to do so included:

1. Data were generated that the advice was counterproductive and that the way it was crafted was also counterproductive.

2. Similarly, data were generated that Andy's actions led the advisors to attribute that Andy was closed.
3. Every time the advisors or Andy said something that focused on the here-and-now interaction, the group dealt with it by going back to the situation in the firm.

The FM concluded that these features recurred so often that it was unlikely that the advisors or Andy would act in ways to interrupt or reduce the escalating counterproductive dialogue.

Session 2

The FM says, "I should like to stop the role-play and ask us to do some reflecting on the past half hour or so. How do you feel about Andy? How does Andy feel about you?"

- P1: He is a very frustrating individual. He says he wants to learn, but I doubt it. There is really no discussion, no sharing of ideas. He listens to a statement, then issues a defensive, "you just don't understand."
- P2: I felt that Andy was waiting for the answer he wanted to hear. He kept saying to me that he was not open to our advice.
- FM: Did you ever hear Andy say, "I agree with your advice, but I don't know how to implement it?"
- P2: Yes, he said that, but when he had an opportunity to react, he was not open to learning.
- FM: What did Andy say that illustrates that he was closed?
- P3: He kept changing the topic, blaming the board and the CEO.
- P4: I am confused when he says to me that my advice is abstract, and therefore he cannot put it into practice.
- FM: Did anyone hear someone say something like, "Andy, if I am going to help you, I need to know more about what it is that you find unhelpful about my advice?" I do not recall hearing any such comment.
- P5: To me, Andy was saying, "yeah, that is a great idea," and then he dismissed it. He did not say, in effect, "let's explore that further," it was a closed door.
- FM: Perhaps Andy feels that way about you as consultants. He asks for your advice to be more concrete. He feels that this was not done.

The FM had two objectives during this second session. The first was to ask the group members to express publicly any feelings that they had about

Andy during their role-play. The reactions were quick and strong.

- "We doubt that Andy is genuinely interested in changing."
- "Andy espouses that he wants to learn, but he is closed to learning."
- "Andy seeks that advice that will make it possible for him to blame the others."
- "Andy seeks absolute control of the situation."

The second objective was to use their replies to help the group members begin to examine the extent to which they had some responsibility for the frustrations they experienced, such as placing all the blame for their ineffectiveness with Andy upon Andy. For example, after several evaluations and attributions that Andy was closed to learning, the FM asked if anyone heard Andy say that he agreed with their advice, but he did not know how to implement it. The group members responded by blaming Andy. Andy, in turn, responded to their help primarily by blaming the board and the CEO for his troubles. The FM points out that they appear to be dealing with their own failures by blaming Andy. Andy dealt with his failures by blaming the CEO and the board. They were dealing with Andy in the same way that they criticized him.

A second line of intervention with Andy could have been to examine his claim that their advice was abstract. No one responded to the criticisms by saying that it was not their intention to be unhelpful about their advice, or about the way that they crafted the advice. The group members agreed that no one made such inquiries. The reason given was that Andy was closed.

These replies illustrate features of defensive reasoning. They begin with the premise that Andy was wrong when he claimed that the group's advice was abstract and unhelpful. When asked what led them not to test this conclusion, they responded, in effect, that there was "not much sense in doing so because Andy was closed." This is not a valid test of their claim that Andy was closed to learning, because the claim was part of their premise.

FM: May I ask, how do you think Andy feels about us?

P7: He is a victim.

P8: Not understood.

FM: And, that is what Andy said about the board members and the CEO. They didn't understand him, that he was a victim, etc. So, as Andy, I am trying to figure out how I am going to get the help that I need.

P9: I go back to an earlier remark. What Andy needs is quantifiable information [that could be used to back up his firing].

P10: My feeling is that I can't offer anything to this guy that will work.

FM: May I reflect on what is being said to Andy?

*Andy, I tried to give you helpful advice;
I did it with the best of intentions;
I was immediately told that it wouldn't work;
I tried to figure out why it would not work;
You told me that you could not trust the CEO;
You didn't give me any reason or didn't illustrate your attribution about the CEO;
So Andy, I am left with the feeling that I know of no way that I can help you.
So when you ask for help, I say (to myself) not me.*

Is this a fair summary of your views and perhaps of others?

P10: You said it better than I did.

(Two other voices—"Yes")

FM: This illustrates an important puzzle. What I said [above] came from comments made by members of this class. You know what to say, but you do not say it. How come?

Before we return to this puzzle, the FM notes a pattern in the actions of the members with Andy, that is, the dialogue took on the features of escalating errors and defensiveness, which became self-reinforcing and self-sealing. These features did not help to produce effective learning on anybody's part. Moreover, the features were kept private and unvoiced until the frustration became intolerable and the FM intervened to make all this discussable.

This pattern has been found frequently. We have labeled it as a *generic counterproductive anti-learning pattern* that occurs when human beings are trying to solve problems that are potentially or actually embarrassing, or threatening to their sense of competence in solving such problems (Argyris, 1993; Argyris & Schön, 1996).

PART 2

Using a Theory of Action Perspective to Understand and Explain the Story in Part 1

The "Andy" Case describes the errors he made that led to his demise. The participants in this example (as well as those in six other settings in which the Andy Case has been used) see the source of his errors as a lack of knowledge and skills, for example, Andy did not deal effectively with politics, culture, and motivating people. But Andy made it clear he had become aware of his blindness. The help that he was seeking included reducing his

blindness and increasing his skills. The first questions to ask are "How come Andy was so blind?" and "How do we explain his lack of skills?"

Let us begin with Andy's beliefs about what is effective leadership behavior. Andy gives us many cues about his beliefs, for example, to be an effective leader:

- Be action-oriented, i.e., make getting the job done a very high priority. Give of yourself for the sake of the organization.
- Hire managers who hold the same beliefs and degree of commitment.
- Reward such managers.
- Reduce the barriers that are obstacles to the aforementioned, e.g., try to help individuals with poor or mediocre performance to improve. If they do not improve, remove them. It is not fair to saddle good performers with poor performers.

Three important features characterize these beliefs. First, the beliefs are in the form of causal claims. Andy claims *if* he behaves consistently with each belief, *then* he will be an effective leader. The second feature is that the causal claims form a moral basis for effective leadership. For example, Andy values personal responsibility, tough performance standards, and being action-oriented. The third feature is that the claims are crafted in ways such that their validity is difficult to test because they are stated in abstract terms. They do not specify the behavior required to implement them. For example, are there not conditions where being focused primarily on the task might lead to ineffective leadership? Or where hiring managers who are like him could create a conformity-oriented culture that limits exploring significantly different ideas?

The next question is, "To what extent do Ted and the board bear some responsibility for the problems?" They also held beliefs about what the company needed. Recall, for example, their call to:

- Shake up the place.
- Get rid of the complacency.
- Transform the management mentality from "fat and happy" to lean and tough.
- Focus on innovation.

Their beliefs are causal claims about the leadership the company requires to enhance its performance. Moreover, as in the case of Andy, their claims are stated in abstract terms.

We have identified two basic causes of the problems between Andy, Ted, and the board. First, Andy's theory of effective leadership contains several important gaps. It spells out effective results as he defines them. It does not spell out how—if he acts according to his views of effective leader-

ship—he might alienate key people and reduce the likelihood of getting necessary feedback to become aware of counterproductive impact. Andy's theory of effective leadership does not spell out how to deal with those individuals who cannot meet his standards—other than getting them out of the way.

Ted and the board members' view of effective action specified the results they wanted for the organization; however, they also failed to make explicit the extent that they would tolerate Andy (or anyone else) acting as he did. Nor did they spell out what they knew at the outset, namely, that their strategy for dealing with differences would be to bypass the differences and cover up that bypass. As was true for Andy, their position of how to reduce any barriers to their views by Andy's (or anyone else's) ineffective actions was to ask him to leave. As in the case of Andy, they [the CEO and board members] were unaware and unaware that they were unaware, due to skilled incompetence.

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They recommended the following to help Andy:

- Help Andy make explicit his views about effective leadership and then help him to identify any inconsistencies in these views.
- Help Andy to specify the features, if any, of his theory of effective leadership that inform him about how to deal with these inconsistencies so that they do minimal damage.
- Help Andy to specify the features of his theory of effective leadership that inform him about how to deal with his own and others' actions that are self-protective and counterproductive to learning.

It is fair to conclude that the participants in the class were not effective in implementing their recommendations. In this connection recall that Andy kept telling the participants their advice was not helpful because it was abstract and did not contain advice about how to implement it. Moreover, in all cases, when Andy stated this complaint, the CEOs either blamed him for not understanding or ignored him.

The FM stopped role-playing and asked the participants how effective they felt they were in helping Andy. All agreed that they were not effective. The participants explained their failure by blaming Andy. During the role-play Andy frequently blamed the participants.

If we step back and look at the entire case discussion, we find that:

- Andy was ineffective as a COO in the company.
- Ted and the board members were ineffective in dealing with Andy.
- The participants in the class were ineffective in helping Andy.
- Andy was ineffective in helping the participants provide him with the advice that he needed.

Thus we see that interactions between Andy, Ted, and the board, Andy and the class, and the class with Andy, created conditions that were not only counterproductive to learning but also were self-reinforcing and self-fueling of this lack of learning.

How can we explain these observations?

A Theory of Action Perspective

We have found that beliefs or espoused theories vary widely. Theories-in-use do not. The theory-in-use that is most prevalent is labeled Model I. To date, the use of Model I is consistent, regardless of gender, race, culture, education, wealth, and type of organization (Argyris, 1990, 1993, 2000; Argyris, Putnam, & Smith, 1985; Argyris & Schön, 1996).

Briefly, Model I theory-in-use is composed of four governing variables: (a) be in unilateral control; (b) strive to win and not lose; (c) suppress negative feelings; and (d) act rationally (see Figure 1). These actions must be performed in such a way that satisfy the actors' governing values—that is, they achieve at least the minimum required level of the governing values such as being in control and winning. Model I tells individuals to craft their positions, evaluations, and attributions in ways that inhibit inquiries into and tests of them with the use of independent logic. The consequences of these Model I strategies are likely to be defensiveness, misunderstanding, and self-fulfilling and self-sealing processes (Argyris, 1982; Argyris & Schön, 1996).

Model I theory-in-use requires defensive reasoning. Individuals keep their premises and inferences tacit, lest they lose control. They create tests of their claims that are self-serving and self-sealing. The likelihood of misunderstanding and mistrust increases. The use of defensive reasoning prohibits questioning the defensive reasoning. We now have self-fueling processes that maintain the status quo, inhibit genuine learning, and reinforce the deception.

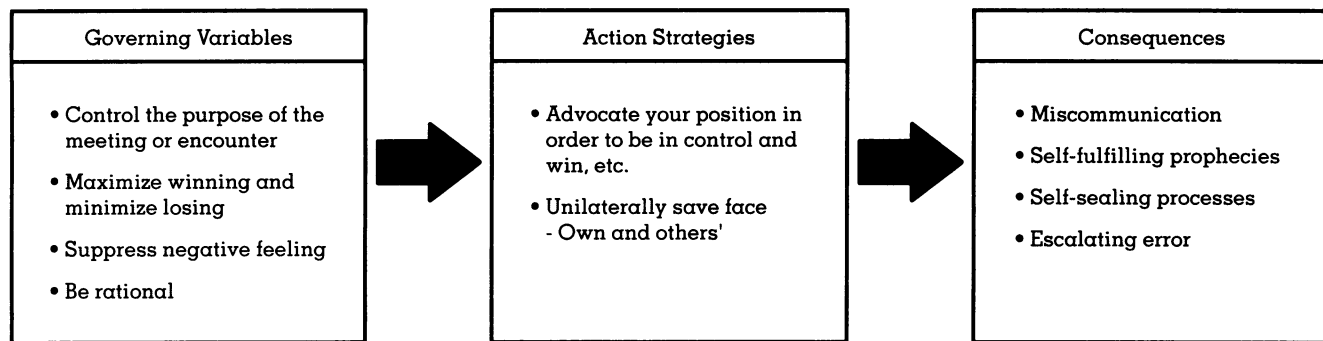


FIGURE 1
Model I Theory-in-Use

Model I theory-in-use requires defensive reasoning. . . . We now have self-fueling processes that maintain the status quo, inhibit genuine learning, and reinforce the deception.

Human beings learn their theories-in-use early in life, and therefore, the actions that they produce are highly skilled. Little conscious attention is required to produce skilled actions. Indeed, conscious attention could inhibit producing them effectively. The lack of awareness owing to skill and the lack of awareness caused by our unilaterally controlling theories-in-use produce a deeper lack of awareness; namely, we become unaware of the programs in our heads that keep us unaware.

The results are skilled lack of awareness and skilled incompetence (Argyris, 1982). For example, when individuals have to say something negative to others (e.g., "Your performance is poor") they often ease in, so as not to upset the other. Two of the most frequent easing-in actions that we observe are (a) nondirective questioning, and (b) face-saving approaches. For these to work, the individuals must cover up that they are acting as they are, in order not to upset the other. For a cover-up to work, the cover-up itself must be covered up.

Under these conditions, we find that the recipients are wary of what is happening. They sense that there may be a cover-up. Because they hold the same theory-in-use, they also cover up their private doubts. The result is counterproductive consequences for genuine problem solving. All of this occurs with the use of skillful behavior; hence, the term *skilled incompetence*.

When organizational worlds are dominated by these consequences, human beings become cynical about changing the self-fueling counterproduc-

tive process. Not surprisingly, they learn to distance themselves from taking responsibility, losing, and they suppress negative feelings, especially those associated with embarrassment or threat. Individuals use behavioral strategies consistent with these governing values. For example, they advocate their views, making evaluations and attributions in ways that ensure their control, winning, and suppression of negative feelings. In short, individuals learn theories-in-use that are consistent with producing unilateral control.

It is true that organizations are hierarchical and based on unilateral control. It appears equally true that individuals are even more so. Place individuals in organizations with structures designed to be more egalitarian, and individuals will eventually make them more unilateral and authoritarian. The most massive examples of such situations of which I am aware are the so-called alternative schools and communes of the 1970s. Most have failed and slowly faded away (Argyris, 1974).

Organizational Defensive Routines

Organizational defensive routines are any action, policy, or practice that prevents organizational participants from experiencing embarrassment or threat and, at the same time, prevents them from discovering the causes of the embarrassment or threat. Organizational defensive routines, like Model I theories-in-use, inhibit genuine learning and overprotect the individuals and the organization (Argyris, 1990).

A fundamental logic underlies all organizational defensive routines. It can be illustrated by one of the most frequently observed defenses, namely, sending mixed messages, such as, "Mary, you run the department, but check with Bill," or "John, be innovative, but be careful." The logic is as follows: (1) send a message that is inconsistent, (2) act as if

it is not inconsistent, (3) make Steps 1 and 2 undiscussable, and (4) make the undiscussability undiscussable.

Organizational defensive routines are caused by a circular, self-reinforcing process in which individuals' Model I theories-in-use produce individual strategies of bypass and cover-up, which result in organizational bypass and cover-up, which reinforce the individuals' theories-in-use. The explanation of organizational defensive routines is therefore individual and organizational. This means that it should not be possible to change organizational routines without changing individual routines, and vice versa. Any attempts at doing so should lead to failure or, at best, temporary success.

The governing values of Model II are valid information, informed choice, and vigilant monitoring of the implementation of the choice to detect and correct error (see Figure 2). As in the case of Model I, the three most prominent behaviors are advocate, evaluate, and attribute. Unlike Model I behaviors, however, Model II behaviors are crafted into action strategies that openly illustrate how the actors reached their evaluations or attributions, and how they crafted them to encourage inquiry and testing by others. Productive reasoning is required to produce such consequences. Productive reasoning means that the premises are explicit, the inferences from the premises are also made explicit, and finally, conclusions are crafted in ways that can be tested by logic that is independent of the logic used by the actor to create the conclusion. Unlike the defensive reasoning, the logic used is not self-referential. As a consequence, defensive routines that are counterproductive to learning are minimized, and genuine learning is facilitated. Embarrassment and threat are not bypassed and covered up; they are engaged (Argyris, 1982, 1993; Argyris & Schön, 1996).

To the extent that individuals use Model II in-

stead of merely espousing it, they will begin to interrupt organizational defensive routines and create organizational learning processes and systems that encourage double-loop learning in ways that persist. These are called *Model II learning systems* (Argyris & Schön, 1996).

Moving Toward Model II

Space does not permit a description in detail of the next steps taken to help the participants move toward Model II, but their essence is practice (Argyris, 1986, 1993; Argyris, Putnam, & Smith, 1985; Argyris & Schön, 1996). The learning occurs in the following sequence.

First, most of the new craftings are consistent with Model I. This activates discussion of the reasoning individuals use to create Model I. It also activates discussion about recrafting. Second, the new conversations are more like hybrids. They contain features of Model I and Model II. Again, the reasoning used to produce the hybrids is discussed. New crafting then follows. The third phase is that individuals begin to produce Model II conversation.

As the participants begin to craft new and more effective conversation, they realize that existing Model I organizational defensive routines could be used to evaluate the new dialogue as ineffective, immature, politically foolish, and so forth. This leads to dialogue about their responsibility to begin to change their defensive routines.

PART III

The Andy Case as a Quasi-experiment

Campbell and Stanley (1963), define an experiment as "any experimenter-controlled event or 'treatment' in the lives of respondents where probable consequences can be empirically assessed" (p.

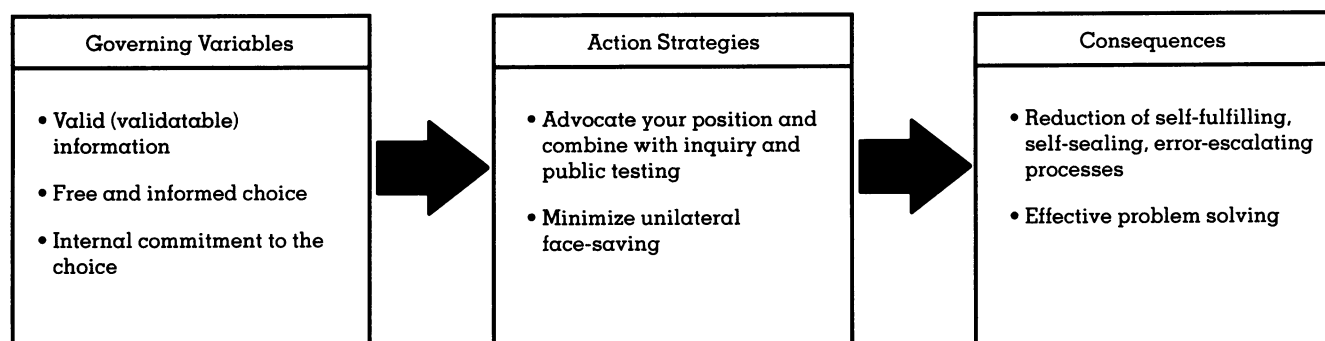


FIGURE 2
Model II Theory-in-Use

224). I should like to show that the "Andy Case" learning experience could be used to test features of the theory used to design the learning experience. Transforming the learning experience into a quasi-experiment requires some relatively simple and straightforward actions that I describe below, such as minimizing threats to internal validity.

Develop A Priori Hypotheses

The first requirement is to develop a priori hypotheses. The following are some examples of hypotheses:

1. To the extent that participants hold a Model I theory-in-use, they will produce actions that are consistent with that theory-in-use.
2. Under these conditions, the participants will not produce actions consistent with Model II theory-in-use, even if they espouse that theory.
3. Under these conditions, participants will be unaware of any discrepancies that they produce between their espoused theories and their theory-in-use while they are producing them.
4. If the participants become aware of the discrepancies, they will automatically and spontaneously blame others or the system in which they are embedded.

Recall that the theory-in-use is a causal design activated by actors that produce the actions that they intend. The design is programmed to produce these actions and no others. This means that we should not find exceptions to the predictions. As Lewin (1935, 1936) pointed out, one exception serves to disconfirm the hypothesis.

Creating Observable Categories Derived From the Theory

Using a Model I theory-in-use, we suggest that advocating, evaluating, and attributing these

three actions will be crafted in ways that do not include illustrations of their meaning, will not encourage inquiry into them, and will not encourage robust testing of the claims being made by the actors (see Table 1).

A Model II crafting would include illustrations, would encourage inquiry, and would encourage testing. A somewhat more complicated scoring procedure has been found to have a respectable degree of interobservable ratings (Argyris, 1965).

Time-Series Observations

Campbell and Stanley (1963) advise that a time series of observations will enhance the credibility of the findings. The observers or analysts scoring the participants' actions in 15-minute (or longer) segments can fulfill this requirement. Thus, instead of the one-shot feature of the Andy Case as presented in this paper, it is a relatively straightforward procedure to strengthen the claims significantly by reducing these threats to internal validity overcome by a time-series design.

Independent Measures of Model I and II Actions

The hypotheses above conjecture that the participants hold a Model I theory-in-use. It is necessary to have a measure of the degree of "Model Oneness" of each participant before he or she enters the classroom.

Measures such as these have been obtained by observing the participants in their home settings (Argyris, 1993; Argyris & Schön, 1996).

Accordingly, we developed a case methodology to assess the participants' theory-in-use in the home setting. Before they arrive we ask the participants to complete a short case that illustrates an important challenge that the writer of the case is

TABLE 1
Scoring Conversation

Conversation	Scored As
1. "Andy, you failed. You mis-assessed the situation."	Negative evaluation. No illustration, no encouragement of inquiry, or testing.
2. "Andy, you are very good at talking, but not at all good at listening."	Same as above.
3. "Andy, you should study the culture carefully, especially how the CEO communicates with the organization."	Advocacy, no illustration, inquiry, or testing.
4. "You believe that you have a messianic right to organize, without contemplating the effect on others."	Attribution, no illustration, inquiry, or testing.
5. "You have a strong need to be seen as competent and to be in control."	Attribution, no illustration, inquiry, or testing.
6. "Concentrate on areas that you do not know well."	Advocacy, no illustration, inquiry, or testing.

facing or is expecting to face. The cases typically require 30 to 45 minutes to complete (Argyris, 1982; Argyris & Schön, 1996).

The cases can be scored by the faculty member (FM) or by raters who were not participants in the learning experience. The latter provides an independent assessment that can be compared with the one made by the FM. An additional set of data can be obtained by asking the CEOs to score their own cases toward the end of the workshop. Indeed, learning to score their cases becomes an opportunity for them to learn to reflect thoughtfully on their actions.

The cases and the analysis of the transcripts from home meetings on everyday organizational issues are valuable in dealing with the possibility that the "treatment" in the Andy Case session could either be the case by itself or the case and the FM. If the home cases indicate Model I theory-in-use, the claim that the Model I actions during the Andy Case are caused by the CEOs is then supported.

Random Assignment to Experimental and Comparison Group

Another challenge to threats of validity is to create control or, more accurately, comparison groups that do not receive the experimental treatment. This is even more effective if individuals can be assigned randomly and secretly to each type of group.

This requirement is difficult to fulfill because the human beings who attend the courses do so because they are promised, and they expect, to learn to increase their effectiveness. How do you lie to one group and cover up that you are doing so? How do you do this in a learning environment designed to reduce lying, cover-up, and cover-up of the cover-up?

Some strategies begin to approximate this requirement. For example, the FM used in the Andy Case may also be used in a primarily lecture-based session describing the theory-of-action approach. One could compare the home results with those at the lecture session in home meetings. One could also ask the participants to write left- or right-hand column cases that they believe illustrate how they implemented their learning in the home situation. These cases should show no change in theory-in-use, even if the participants claimed that they learned Model II and intended to use it.

Another possibility is to have the experimental group go through its re-education in a fish-bowl setting where a larger group observes but does not participate. Beer and Eisenstat (2000) have used a version of this strategy. However, they involve the

onlookers in a separate session, or in sessions with members of the experimental group.

The contributions of Campbell and Stanley (1963) were based on a systematic inquiry into the ways in which threats to internal validity and external validity can be reduced. I suggest that meeting these requirements is necessary but not sufficient for producing scientific knowledge, especially if scientists intend to produce knowledge that is usable. In order for this claim to be credible, the knowledge that we produce should show *implementable validity*. As White (1959) indicated years ago, the key to competence is effective action. Effective action requires implementing the action.

It is possible to produce knowledge with a high degree of internal and external validities that has low implementable validity. For example, there are many studies showing that trust has a high degree of external validity. Yet, the studies do not prescribe the theory-in-use behavior and conditions required to implement trust.

Implications for Creating New Learning Experiences

All these considerations lead to the hypothesis that the programming and the skilled lack of awareness (when producing action) create the appearance that actions are "wired-in." This, in turn, suggests that the model in good currency about unfreezing the old, introducing the new, and freezing the new, should not be taken to mean that Model I is permanently unfrozen and somehow eliminated. I cannot, to date, conceive of a process that "unfreezes" some designs-in-use that are already programmed. I believe that a more accurate explanation will someday be shown to be that *unfreezing* means that individuals become aware of their skilled incompetence and skilled lack of awareness. A new process then accomplishes learning Model II. The end result is that individuals have two theories-in-use stored in their heads. This provides human beings with two degrees of freedom in choosing how they will act. Model I, for example, may be preferred when learning single-loop skills that are part of the existing routines. Model II may be more appropriate for solving the nonroutine potentially or actually embarrassing problems. For example, a Model I production of the social virtues is quite different from a Model II production (see Table 2). Most human beings do not realize the differences, because typically, they are not required to produce Model II social virtues in a Model I world (Argyris, 2000).

Returning to the Andy Case, we now have a

TABLE 2
Social Virtues

Model I Social Virtues	Model II Social Virtues
<p>Caring, help, and support Give approval and praise to other people. Tell others what you believe will make them feel good about themselves. Reduce their feelings of hurt by telling them how much you care and, if possible, agree with them that the others acted improperly.</p> <p>Respect for others Defer to other people and do not confront their reasoning or actions.</p> <p>Strength Advocate your position in order to win. Hold your own position in the face of advocacy. Feeling vulnerable is a sign of weakness.</p> <p>Honesty Tell other people no lies or tell others all you think and feel.</p> <p>Integrity Stick to your principles, values, and beliefs.</p>	<p>Increase the others' capacity to confront their ideas, to create a window into their minds, and to face their unsurfaced assumptions, biases, and fears by acting in these ways toward other people.</p> <p>Attribute to other people a high capacity for self-reflection and self-examination without becoming so upset that they lose their effectiveness and their sense of self-responsibility and choice. Keep testing this attribution (openly).</p> <p>Advocate your position and combine it with inquiry and self-reflection. Feeling vulnerable while encouraging inquiry is a sign of strength.</p> <p>Encourage yourself and other people to say what they know yet fear to say. Minimize what would otherwise be subject to distortion and cover-up of the distortion.</p> <p>Advocate your principles, values, and beliefs in a way that invites inquiry into them and encourages other people to do the same.</p>

better understanding of the difficulties involved in advice that is "abstract." Both Model I and Model II inventions are abstract. The requirement is to illustrate the designs-in-use required to implement it. A review of current examples of best practices that claim to produce leadership, learning, and change consistent with Model II shows that they do not do so. These programs may have the virtue of taking less time in terms of days required to attend a course or participate in a change program, but a closer examination indicates that they may incur greater transaction costs when participants resist them and then cover up the resistance. More important, I believe these programs demean the value of the fundamental purposes of strengthening the human side of organizations and helping organizations become competent in single- and double-loop learning (Argyris, 2000).

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